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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
VARGAS, DIXOMARA

ART UNIT 2862
PAPER NUMBER

DATE MAILED: 01/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/822,771

Applicant(s)

LEE, RAY F.

Examiner

Dixomara Vargas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL.
- 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-54 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7, 9-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foo et al. (US 5,017,872) in view of Fujita et al. (US 6,169,401).

With respect to claims 1, 45 and 46, Foo discloses a device for detecting near field electromagnetic signals, comprising a strip array antenna, wherein the strip array antenna includes: a plurality of conductors arranged so a long axis of each is in parallel and spaced from each other (Column 6, lines 49-68; Figure 1).

Foo discloses the claimed invention except for the length of each conductor is set so as to substantially reduce coupling of a signal in one of the plurality of conductors to an adjacent conductor(s) independent of the spacing between adjacent conductors. Fujita discloses said the length of each conductor is set so as to substantially reduce coupling of a signal in one of the plurality of conductors to an adjacent conductor(s) independent of the spacing between adjacent conductors (Columns 4 and 5, lines 57-67 and 1-9 respectively; Figure 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Foo for the purpose of manipulating the current distributions in accordance with the region from which the highest signal uniformity is desired as shown by Fujita.

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3. With respect to claims 2, 31 and 47, Foo discloses the claimed invention except for the length of each conductor is set so as to be equal to be about $n\lambda/4$, where n is an integer ≥ 1 and λ is the wavelength of the signal to be detected. Fujita discloses said the length of each conductor (Columns 4 and 5, lines 57-67 and 1-9 respectively; Figure 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Foo for the purpose of manipulating the current distributions in accordance with the region from which the highest signal uniformity is desired as shown by Fujita.
4. With respect to claims 3, 21 and 34, Foo discloses a number of parallel conductors comprising the strip array antenna is one of 4 or more conductors, 16 or more conductors, or 32 or more conductors (Figure 1).
5. With respect to claims 4, 22 and 35, Foo discloses a number of parallel conductors comprising the strip array antenna is in the range of one of the ranges of from about 4 to about 16 conductors, from about 4 to about 32 conductors or from about 16 to about 32 conductors (Figure 1).
6. With respect to claims 5, 19 and 54, Foo discloses an encapsulation member, wherein the encapsulation member includes: a substrate, on one surface of which is disposed the plurality of conductors, a ground plane that is disposed on an opposing surface of the substrate, and an overlay that covers the conductors disposed on the substrate (Figure 1).
7. With respect to claim 6, Foo discloses the substrate and the overlay are made of a material having a dielectric constant so the wavelength of the electromagnetic wave on the each conductor is reduced so as to be in a desired range (Column 3, lines 20-32).

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8. With respect to claims 7 and 23, Foo discloses the dielectric constant of the substrate and overlay, material is in the range of from about 6 to 9.6 (Column 4, lines 29-30).

9. With respect to claims 9 and 48, Foo discloses each of the conductors is terminated in a manner so that the electromagnetic wave on each of the conductors is one of a standing wave or a traveling wave (Column 5, lines 14-25).

10. With respect to claims 10, 24, 36 and 49, Foo discloses a termination mechanism operably connected to one end of each conductor and configured so as to terminate each of said one end as one of a short or an open (Column 3, lines 3-18).

11. With respect to claims 11, 25, 37 and 50, Foo discloses the claimed invention except for one end of each conductor is terminated with a resistive match and wherein n is an even integer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Foo for the purpose of canceling selected frequencies other than the self-resonance frequency.

12. With respect to claims 12, 26 and 51, Foo discloses a signal guard mechanism being arranged so that the guard mechanism isolates at least a portion of the strip array antenna from external EMF interference (Figure 1, #11).

13. With respect to claim 13, Foo discloses the guard mechanism comprises a plurality of guard elements, where a guard element is disposed in proximity to each end of the strip array antenna to isolate at ends of the strip array antenna (Column 7, lines 3-17).

14. With respect to claim 14, Foo discloses the guard mechanism comprises plurality of guard elements, where a guard element is disposed along and in proximity to each side of the strip array antenna to isolate at least sides of the strip array antenna (Column 7, lines 3-17).

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15. With respect to claim 15, Foo discloses the guard mechanism is disposed in proximity to each end of the strip array antenna and along and in proximity to each side of the strip array antenna to isolate ends and sides of the strip array antenna (Column 7, lines 3-17).
16. With respect to claim 16, Foo discloses the guard mechanism is electrically grounded (Figure 1, #11).
17. With respect to claims 17, 18, 28, 29, 38, 39 and 53, Foo discloses the claimed invention except for the strip array antenna further includes an encapsulation member in which is disposed the plurality of conductors and wherein a spacing (s) between adjacent conductors and a height (h) of the encapsulation member is set so a ratio $s/h \geq 2.5$ or $s/h \geq$ about 3. Fujita discloses said the dimensions of each conductor (Columns 4 and 5, lines 57-67 and 1-9 respectively; Figure 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Foo for the purpose of manipulating the current distributions in accordance with the region from which the highest signal uniformity is desired as shown by Fujita.
18. With respect to claim 20, see rejection of claims 1, 2, 5, 6 and 9 above.
19. With respect to claim 27, see rejection of claims 15 and 16 above.
20. With respect to claim 30, see rejection of claims 1, 2, 5, 6 and 9 above.
21. With respect to claim 31, Foo discloses the claimed invention except for Y switches, one for each receiver and being operably coupled thereto. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Foo for the purpose of configuring the switches so as to decouple the Y receivers and X conductors when an excitation

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electromagnetic signal is being generated and to couple the Y receivers and X conductors when an excitation electromagnetic signal is not being generated.

22. With respect to claim 33, Foo discloses $X = Y$ (Figure 1).

23. With respect to claim 40, see rejection of claims 1, 2, 5, 6 and 9 above.

24. With respect to claims 41 and 43, Foo discloses the claimed invention except for a control mechanism operably coupled to the near field electromagnetic signal detection apparatus and the excitation signal generation apparatus and configured so as to selectively control the transmission of signals by the excitation signal generation apparatus and the reception of MRI signals by the near field signal detection apparatus so that each occurs at predetermined times. Fujita discloses said mechanism (Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Foo for the purpose of modulating the selected pulse to be emitted according to the region under examination.

25. With respect to claim 42, see rejection of claims 1, 2, 5, 6 and 9 above. Also Foo disclose an image reconstruction device operably coupled to the near field electromagnetic signal detection apparatus that processes the detected MR signals and provides an output representative of the reconstructed image (Column 3, lines 11).

26. With respect to claim 44, Foo disclose a main magnetic coil that generates a homogenous magnetic in each slice; gradient coils that generate at least one additional magnetic field (Column 1, lines 23-31). Foo disclose the claimed invention except for the controller mechanism further controls the operation and energization of the main and gradient coils. Fujita discloses said mechanism (Figure 1). It would have been obvious to one of ordinary skill in the art at the time

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the invention was made to modify Foo for the purpose of modulating the selected pulse to be emitted according to the region under examination.

27. With respect to claim 52, see rejection of claims 5 and 17 above.

Allowable Subject Matter

28. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

29. With respect to claim 8, the following is a statement of reasons for the indication of allowable subject matter: the prior art fails to teach a ground plane is configured to keep EMF on each conductor in a quasi-TEM mode.

Conclusion

30. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional prior art cited at the PTO 892 discloses birdcage antennas with dielectric support.

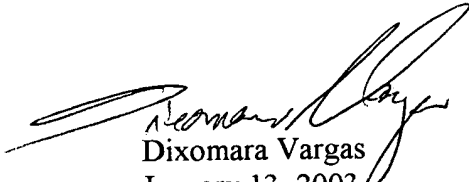
.Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dixomara Vargas whose telephone number is (703) 305-5705. The examiner can normally be reached on 8:00 am. to 4:30 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (703) 305-4816. The fax phone numbers for

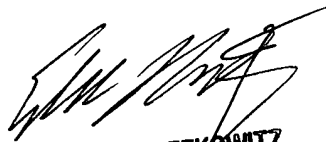
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the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0956.



Dixomara Vargas
January 13, 2003



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